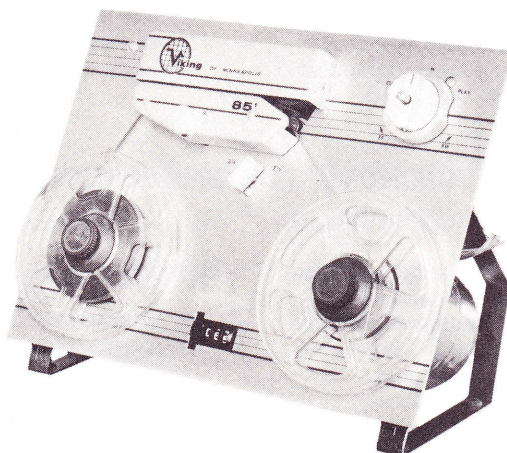


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VIKING MODEL  
85 Series (Ch. RP-61B)VIKING MODEL  
85 Series (Ch. RP-61B)

## GENERAL INFORMATION

Viking 85 Series tape transports consist of the following types:

85Q — quarter-track and dual-track stereophonic, and single-channel playback.

85R — half-track erase, record, and playback.

85RQ — quarter-track and half-track stereo; and half-track erase, record, and playback.

85ES — half-track stereo erase, record, and playback; independent erase or record of either channel.

85SQ — quarter-track playback and half-track stereophonic erase, record, and playback; independent erase or record on either channel; quarter-track playback and sound on sound.

The Viking 85 Series has a four-pole induction, capstan drive motor and a four-pole, variable-torque, take-up reel drive motor.

These recorders have two speeds, 7 1/2 and 3 3/4 ips. When both tracks are used for monaural, recording times are as follows:

Reel Size	3 3/4 ips	7 1/2 ips
5" (600 ft.)	1 hour	1/2 hour
7" (1,200 ft.)	2 hours	1 hour

The Viking 85 Series operates on 60 cycles, 105-125 volts AC only.

Manufactured by:  
Viking of Minneapolis  
9600 Aldrich South  
Minneapolis 20, Minnesota

VIKING MODEL  
85 Series (Ch. RP-61B)

*This material compiled and published by*

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C395

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DATE 7-59

SET 449

FOLDER 18

SET 449 FOLDER 18

## PREPARING FOR OPERATION

1. Plug AC cord into a receptacle of the proper rating.
2. Turn unit on.
3. With motor running, set speed of recorder to 7 1/2 or 3 3/4 ips, depending upon speed at which tape was, or is to be, recorded.
4. Be certain that function controls are in the neutral position.
5. Set Head Shift control to half-track or quarter-track (corresponding to type of recording to be made or played).

## FUNCTION OF TAPE DECK CONTROLS

### On-Off

A pin in the center of the Bar knob actuates the AC switch. Pushing this pin in turns the AC power on; pulling this pin out turns the AC power off.

### Bar Knob

1. Turning this knob counterclockwise puts the unit in the cuing position. The brakes on the supply and take-up reels are released, and the pressure pads place the tape against the heads. The reels can now be turned backward or forward for cuing or editing.
2. When the knob is straight up or down, the tape deck is in the neutral position. In this position, the brake tension is on both reels.
3. For recording and playback, turn the knob clockwise. In this position, both motors are turned on and the take-up reel brake is released, but a slight tension remains on the supply reel.

### Concentric Ring

1. For rewind, turn knob counterclockwise. This moves the supply reel to the right so it will engage the motor rewind drive ring.
2. Center position is neutral.
3. For Fast Forward, turn ring clockwise. In this position, the fast forward drive motor is switched on, and a slight tension is maintained on the brake at the supply reel.

### Speed Change

Selects the desired tape speed. Do not change this control unless the motor is running.

### Head Shift

The H position is for dual-track tapes. The Q position is for quarter-track tapes.

NOTE: When this control is in the Q position, the alignment of all heads is affected vertically.

## FUNCTION OF AMPLIFIER CONTROLS

### Off-On-Playback Level

Turns the power to the amplifier on or off, and regulates the playback volume.

### Play-Record

Selects the Record or Playback mode of operation.

NOTE: To prevent accidental erasure, rotate this

control to the Play position after a recording has been made.

### Equalization

Equalizes the high and low note content.

### Record Level

Controls the loudness of a recording to be made and thus prevents saturation or overloading of the tape.

## OPERATING INSTRUCTIONS

### Threading Tape

1. Place a reel of tape, up to seven inches in diameter, on supply reel (62). Place an empty reel of the same size on take-up reel (15).
2. Place controls in neutral position.
3. Unwind fourteen inches of tape from supply reel

(62). Insert tape into slot of tape heads. Secure other end of tape to the empty reel on take-up reel (15).

### To Record from Microphone

1. Turn on AC power on tape deck and amplifier.
2. Thread tape (see "Threading Tape").



3. Plug microphone into low-level input jack on back of amplifier.
4. Turn Play-Record control to Record position.
5. Adjust recording level so the eye indicator barely closes during recording peaks.
6. To start the tape, turn Bar knob to F.

### To Record from a Phonograph or Tuner

1. Turn on AC power on tape deck and amplifier.
2. Thread tape (see "Threading Tape").
3. Plug phonograph or tuner into the high-level input jack on the back of the amplifier.
4. Turn Play-Record control to Record position.
5. Adjust recording level so the eye indicator barely closes on recording peaks.

### To Record from a Radio or Television Receiver

Place the microphone approximately six to twelve inches in front of the receiver speaker. Turn the receiver volume control to a normal level. Turn the

receiver tone control to maximum treble. Set the recording level and proceed with the recording (see "To Record from a Microphone").

### To Play a Recording

1. Thread tape (see "Threading Tape").
2. Turn Play-Record control to Play position.
3. Turn Bar knob clockwise for Playback position.
4. Adjust Playback Level control for desired listening level.

### To Edit and Splice Tape

**NOTE:** Since one track cannot be edited and spliced without the other track being affected, recordings to be edited should be limited to one track only.

1. Tape may be edited by cutting out unwanted portions or by joining selections into another sequence. Announcements, etc., may be inserted between selections. Unused sections of tape can be spliced for re-use.
2. For best results, cut tape at a slight diagonal, join ends with splicing tape on the glossy side, and trim any excess width.

## ADJUSTMENTS

### Pressure Pads

Pad extension springs (52) should be adjusted for a slight tension when the pads are against the heads. To adjust the tension on the pressure pads, slightly bend pad extension springs (52).

### Rewind Drive

1. Adjust rewind drive adjust nut (64) on control rod (21) until the rewind drive ring on motor pulley (88) engages the hub of supply reel (62) when the Fast Forward-Rewind knob is turned to the Rewind position.
2. Tighten take-up motor switch actuating slug (65) against rewind drive adjust nut (64) after the tension has been set. One of the flattened surfaces must be parallel to the motor switch cam.
3. The motor switch may be relocated, by loosening the two mounting screws, so that it is actuated when the control is in the Fast Forward position.

### Supply Reel Brake

Supply reel has a separate adjustment. The adjustment screw is on the right when the tape deck is viewed from the rear.

To increase brake tension, turn supply reel brake adjusting screw (68) counterclockwise. To decrease brake tension, turn screw (68) clockwise.

**NOTE:** When the Bar knob is in the Cue or Forward position, a pull of 2 1/2 ounces is necessary at the circumference of the supply reel hub for it to turn slowly.

### Brakes (For Supply and Take-up Reels)

1. Set operating controls in neutral position.
2. Adjust brake adjusting screw (19) so that 1/16 inch of the compensator cam bracket is visible through the hole in the main deck assembly.
3. To decrease brake tension, turn brake adjusting screw (19) clockwise. To increase brake tension, turn brake adjusting screw (19) counterclockwise.
4. If further adjustment is needed, set the Bar knob in the forward position. Loosen the brake cord end clip (58) nearest the take-up reel drive motor. Adjust the length of brake cord until it no longer slows the take-up reel drive motor.

**NOTE:** Do not place any tape on the take-up reel for this adjustment.

### Head Alignment

1. Place a piece of transparent tape across the heads and in the tape guides.
2. Observe the position of the pole pieces. If adjustment is necessary, adjust all three screws at each head for the correct position across the width of the tape.
3. On the half-track erase heads, the pole pieces should extend far enough beyond the edge of the tape to be visible.
4. On half-track record-playback heads, the pole pieces should be approximately 0.01 inch from the edge of the tape.



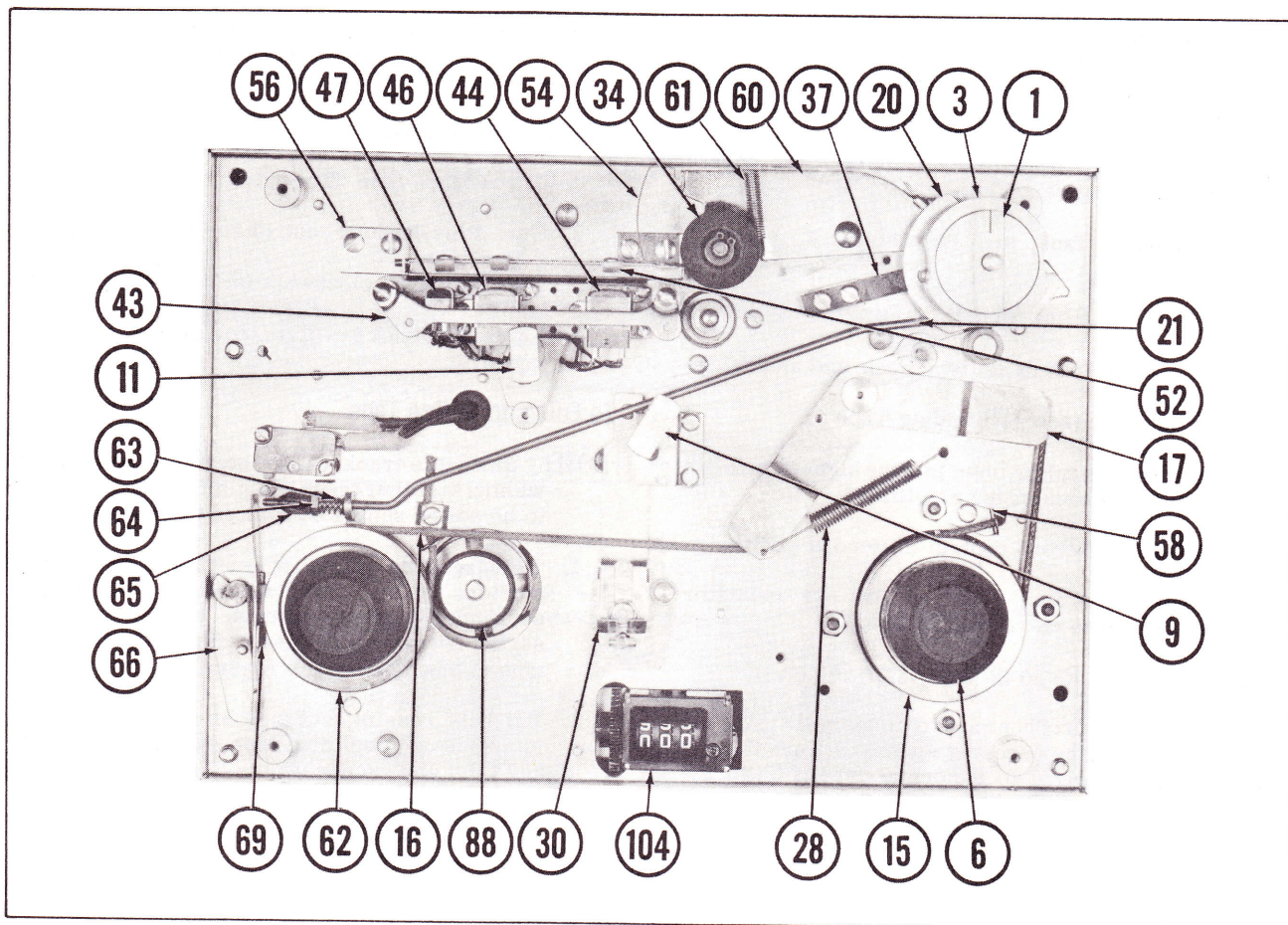


FIG 1. TOP VIEW OF MECHANISM WITH ESCUTCHEON REMOVED

5. On dual-track (stereo) record-playback and erase heads, the pole pieces should be centered across the width of the tape.
6. Quarter-track heads should be centered across the width of the tape when the Head Shift control is in the H position. They should be even with the edge of the tape when the Head Shift control is in the Q position.

To adjust the azimuth correctly, proceed as follows:

1. Connect a standard phono patch cord between the head and the input of a low-level playback pre-amplifier.
2. Connect a ground wire between the preamplifier chassis and the tape transport.
3. Connect an AC meter or scope across the amp-

lifier output; also connect a speaker or phones.

4. Thread a constant-tone alignment tape or a commercially recorded music tape on the unit.
5. Turn the Bar knob and the Play-Record control to the Play position.
6. Adjust screw (46A) for maximum output as indicated on the AC meter or scope.
7. Align the remaining heads as outlined in the foregoing steps.

**NOTE:** For a more precise azimuth adjustment of the quarter-track head, turn the Head Shift control to the Q position. Then thread a full-track or quarter-track tape on the unit and adjust screw (46A) for maximum output.

## LUBRICATION

The capstan contains oilite bearings. Therefore, it requires no further lubrication.

After 1,000 hours of operation, oil the sleeve bearings on the drive motor and take-up motor with one drop of light machine oil. Do not allow any oil to

fall on the belt.

The sliding members on the tape deck assembly occasionally may require lubrication. Use "Lubri-plate" or a similar lubricant for these parts. Do not let any lubricant fall on the drive belt or on any part that might contact the tape.



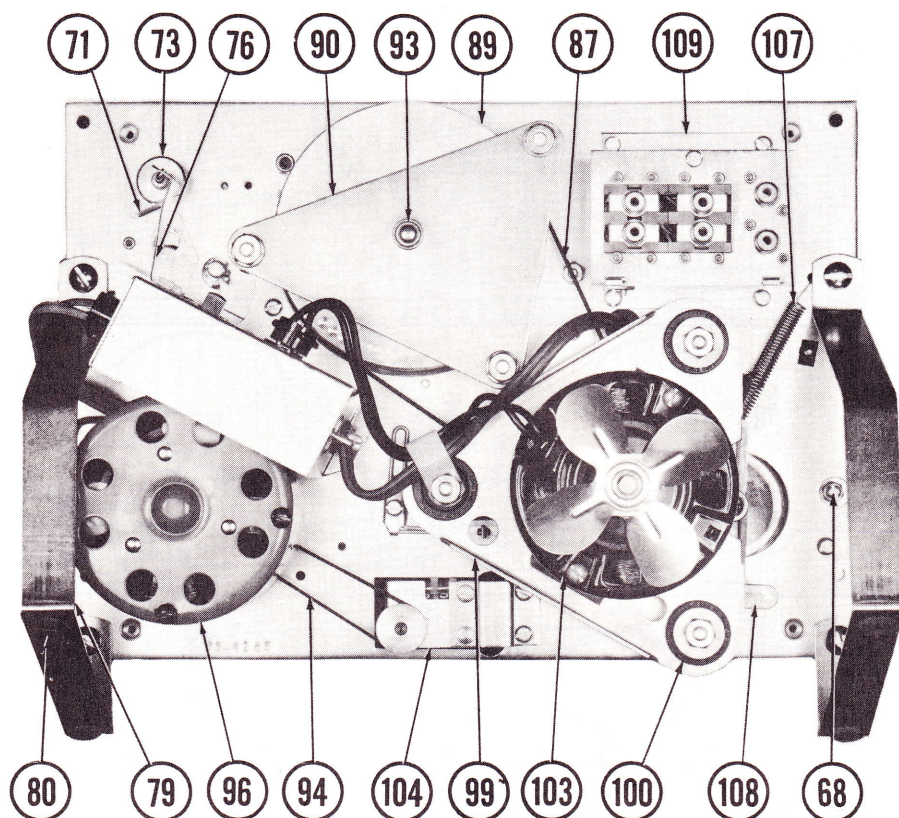


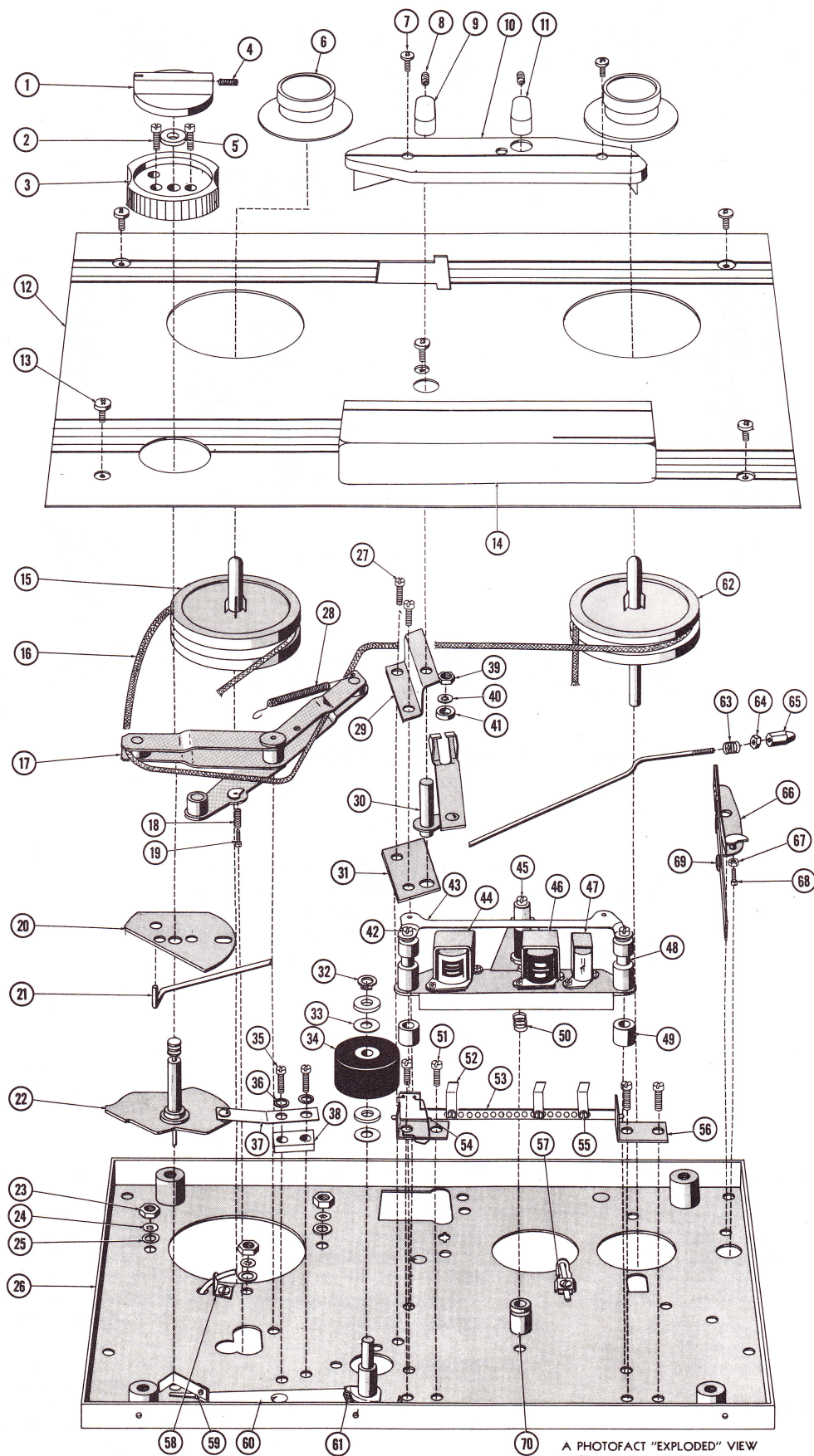
FIG 2. BOTTOM VIEW OF MECHANISM

### CLEANING

In-line quarter-track head(44), in-line half-track record-playback head (46), flywheel (89), and pressure roller (34) may accumulate tape coating residue, which is worn off the tape as it passes these parts. Clean these parts with a soft cloth and alcohol.

### TROUBLE CHART

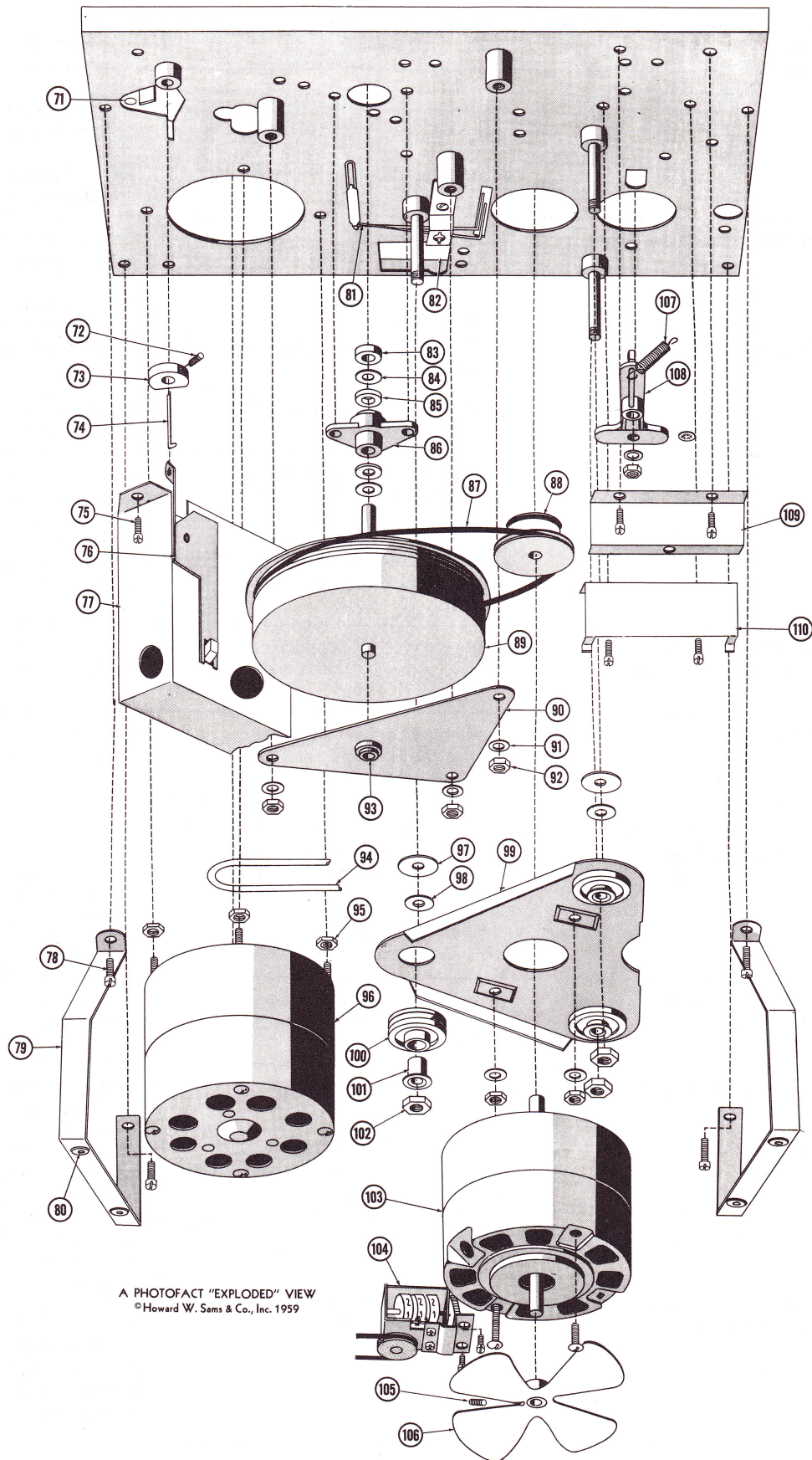
Symptom	Cause	Remedy
Drive motor does not run.	1. Faulty connection to tape deck.	1. Check all AC connections.
Speed Change control does not operate in 3 3/4-ips position.	1. Motor pulley (88) too far from motor housing.	1. Move motor pulley (88) closer to motor housing.
Speed Change control does not operate in 7 1/2-ips position.	1. Motor pulley (88) too close to motor housing.	1. Move motor pulley (88) away from motor housing.
Wow.	1. Pressure pad tension too great. 2. Brakes too tight.	1. See "Pressure Pad" under "Adjustments." 2. See "Brakes" under "Adjustments."
Flutter.	1. Dirty heads. 2. Outer bearing plate (90) binds.	1. Clean heads (see "Cleaning"). 2. Reposition outer bearing plate (90).



A PHOTOFAC "EXPLODED" VIEW  
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FIG 3A. EXPLODED VIEW OF PARTS ABOVE BASEPLATE





**FIG 3B. EXPLODED VIEW OF PARTS BELOW BASEPLATE**

# TROUBLE CHART (CON'T.)

Symptom	Cause	Remedy
	3. Pressure pad tension too great.	3. See "Pressure Pad" under "Adjustments."
	4. Brakes too tight.	4. See "Brakes" under "Adjustments."
Does not record, playback, or erase.	1. Improper head connections.	1. Check head connections with schematic.
	2. Defective heads.	2. Replace heads
Poor high-frequency response.	1. Dirty record - playback head.	1. Clean heads (see "Cleaning").
	2. Head out of alignment.	2. Align heads (see "Head Alignment").
Hum.	1. Tape deck not grounded to amplifier.	1. Connect a ground wire between the tape deck and the amplifier.
	2. Not enough spacing between tape deck and amplifier.	2. Adjust spacing so that AC hum is not picked up.
Too much slack in tape while going from Forward, Fast Forward, or Rewind to Stop.	1. Brakes need adjustment.	1. See "Brakes" under "Adjustment."
Does not rewind tape properly.	1. Rewind drive adjust nut (64) on control rod (21) needs adjustment.	1. See "Rewind Drive" under "Adjustments."
Take-up motor (96) does not run, or runs all the time, when the Bar knob is in the Forward position.	1. Play switch cam (73), which actuates the Play switch, needs adjustment.	1. Loosen set screw (72). Position play switch cam (73) so that play switch actuator (71) is against the flattened portion of play switch cam (73) in the neutral position.
Take-up motor (96) does not run in the Fast Forward position.	1. Switch directly above supply reel hub needs adjustment.	1. See "Rewind Drive" under "Adjustments."
Fast Forward-Rewind knob does not index properly.	1. Too much play in shaft.	1. Loosen set screw (4) and tighten knob assembly.
Capstan binds.	1. Outer bearing plate (90) bent or improperly installed.	1. If outer bearing plate (90) is bent, remove and straighten. After replacing bearing plate, tighten the three retaining nuts while the motor is running.
Capstan does not rotate.	1. Drive belt (87) broken.	1. Replace drive belt (87). Make sure the belt passes between the fingers of the speed change control assembly.



# MECHANICAL PARTS LIST

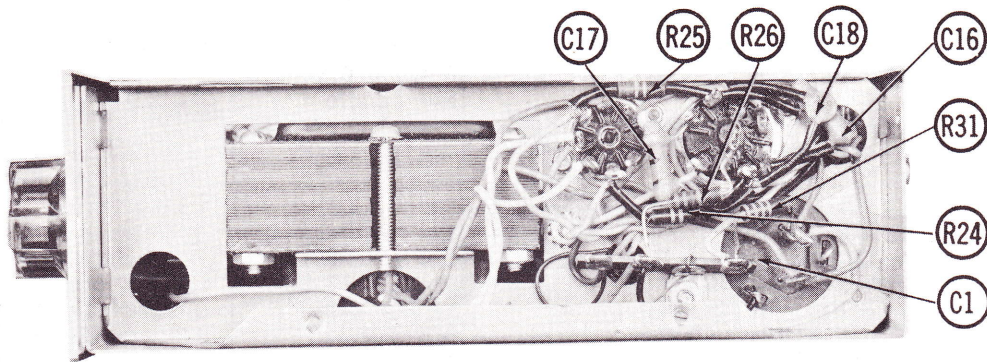
Ref. No.	Part No.	Description
1	D606A	Play-Cue Knob
2		Screw (2)
3	D607	Fast Forward-Rewind Knob
4		Set Screw
5	D357	Felt Washer
6		Tape Reel Keeper (2)
7		Head Cover Screw
8		Set Screw
9	D609A	Belt Shifter Knob
10	D605B	Head Cover
11	D625	Quarter Track Shifter Knob
12	D603A	Front Panel
13		Screw (5)
14	D604A	Pressure Pad Cover
15	D623	Takeup Reel Hub Assy.
16	D622	Brake Cord-29"
17		Brake Actuating Lever
18		Tension Spring
19		Brake Adjusting Screw
20	D613A	Forward Reverse Cam
21	D621	Control Rod
22	D614A	Main Cam Assy. (Play-Cue)
23		Hex Nut
24		Lockwasher
25		Washer
26	D602XA	Main Chassis Assy.
27		Screw (2)
28	D618	Brake Spring
29	D639	Bearing Bracket
30	D637A	Pivot Shaft
31	D640	Tip Bearing
32	5555-25	Grip Ring
33		Washer
34	D312	Pressure Roller
35		Screw (2)
36		Washer
37	D658	Cam Lock Spring Assy.
38	D659	Cam Lock Spacer
39		Hex Nut
40		Lockwasher
41		Flat Washer
42		Screw
43	D620	Head Cover Bracket
44		In-Line Quarter Track Head
45	D626	Quarter Track Shifter
46		In-Line Half Track Record-Playback Head
46A		Azimuth Adjustment Screw
47		In-Line Half Track Erase. Head
48	D624	Tape Guide (2)
49	D633	Head Assy. Spacer (2)
50		Spring
51		Screw (4)
52	D629	Pad Extension Spring
53	D628	Pivot Bar
54	D630	Pivot Bar Spring
55		Screw
56	D627	Pivot Bar Support (2)

Ref. No.	Part No.	Description
57	D656	Brake Cord End Brkt. (2)
58	D657	Brake Cord End Clip (2)
59	D611	Lock Spring
60	D610	Pressure Arm Assy.
61	D617	Pressure Release Spring
62	D333XB	Supply Reel Assy.
63	D35	Control Rod Spring
64		Rewind Drive Adjust Nut
65		Takeup Motor Switch Actuating Slug
66	D318BA	Supply Reel Brake & Bracket Assy.
67		Hex Nut
68		Supply Reel Brake Adjusting Screw
69		Brake Pad
70	D634	Grooved Spacer
71		Play Switch Actuator
72		Set Screw
73	D615	Play Switch Cam
74		On-Off Switch Link
75		Screw
76	Part of Ref. No. 77	On-Off Switch Actuating Lever
77	D668A	Junction Box Assy.
78		Screw
79	D379A	Stand Up Mounting Brkts.
80		Grommet
81	D635	Transfer Arm
82		Transfer Arm Bracket
83		Keeper
84		Felt Washer
85		Bearing
86		Capstan Housing
87	D359	Drive Belt
88		Motor Pulley
89		Flywheel
90	D325	Outer Bearing Plate Assy.
91		Washer
92		Hex Nut
93		Bearing
94	D653	Counter Belt
95		Hex Nut
96	D362H	Takeup Motor
97	D322A	Flat Washer
98		Flat Washer
99		Motor Mounting Plate
100		Shock Mount
101		Motor Spacer (3)
102		Hex Nut
103	D362DA	Motor Assy.
104	D652	Counter
105		Set Screw
106		Motor Fan
107		Spring
108		Part of item 62
109	D643	Jack Support
110	D642	Jack Hinge

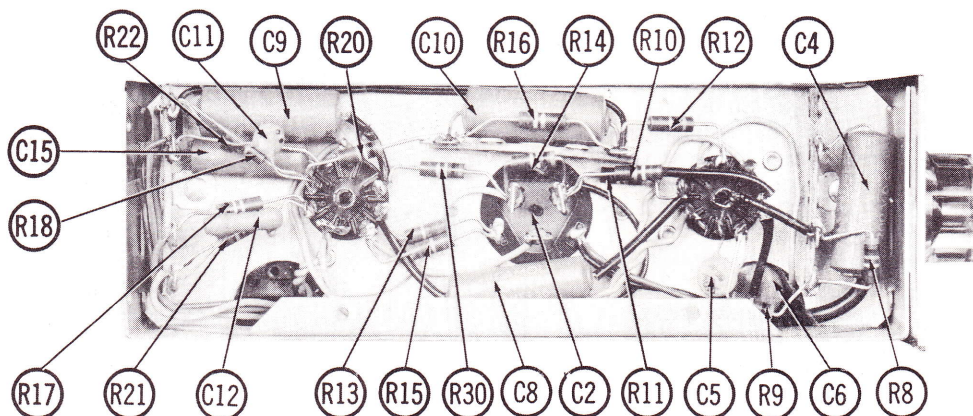
**VIKING MODEL**  
**85 Series (Ch. RP-61B)**

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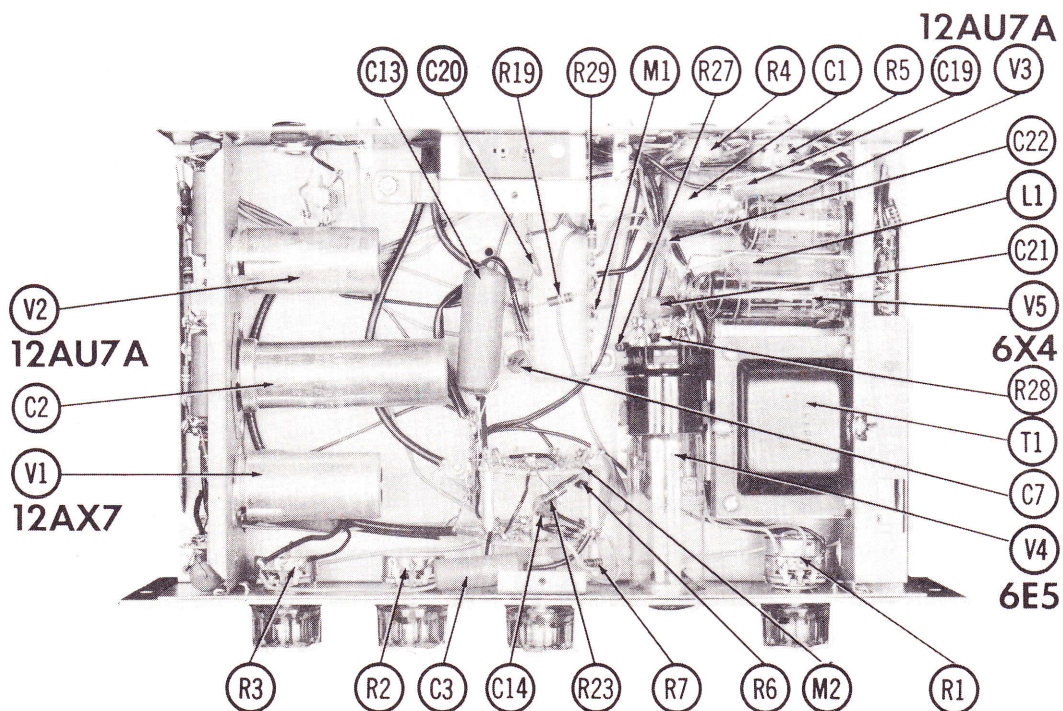




AMP CHASSIS — LEFT END



AMP CHASSIS — RIGHT END



AMP CHASSIS — BOTTOM VIEW



# AMP PARTS LIST AND DESCRIPTIONS

## TUBES ( GENERAL ELECTRIC, SYLVANIA )

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	12AX7	12AD7 *
V2	AF Amplifier	12AU7A	
V3	Bias Osc.	12AU7A	12AV7 *

\* Alternate.

ITEM No.	USE	TYPE	NOTES
V4	Tuning Indicator	6E5	
V5	Rectifier	6X4	

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	VIKING PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	15	475		AFH2-64-50	B0485	FP258	TMD-48	TVL-2820	
B	15	475							
C2A	30	250		AFH3-89	C0670	FP331	TM-3020	TVL-3515	
B	30	250							
C	20	250							

## FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT.	TOL.	VIKING PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	.047	400			P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C4	.1	200			P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C5	50				BPD-00005	DD-500	L10Q5	UC-545	5GA-Q5	
C6	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C7	100				BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C8	.022	200			P288N-022		CUB2S22	GEM-4122	2TM-S22	
C9	.1	200			P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C10	.047	400			P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C11	25				BPD-000025	DD-250	L10Q25	UC-5425	5GA-Q25	
C12	500		10%			DI-501	PM6T5	MCB245	MS-35	
C13	.47	200			P288N-47		CUB2P47	GEM-2047	2TM-P47	
C14	100				BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C15	.01	400			P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C16	500		10%			DI-501	PM6T5	MCB245	MS-35	
C17	500		10%			DI-501	PM6T5	MCB245	MS-35	
C18	1000				BPD-001	DD-102	BYA10DLM	B-210	5HK-D1	
C19	.022	400			P488N-022	DD-203	CUB4S22	GEM-4122	4TM-S22	
C20	750				DI-750	DD-751	L10T75	JL-375	5GA-T75	
C21	.01	400			P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C22	50				BPD-00005	DD-500	L10Q5	UC-545	5GA-Q5	

① Some versions may use 450mmf 10% in this application.

## CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	VIKING PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	250K	1/2	DL3544	B-51	A47-250K-Z	Q13-130	U44	Playback Level
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	US-26	Power On-Off
R2A	5000Ω	1/2	RP15C	B-10	A47-5000-S	Q11-114	U14	Playback Equalizer
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	250K	1/2	RP15D	B-50	A47-250K-S	Q11-130	U46	Record Level
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R4	250Ω	1 (WW)	CN18172				FL250P	Hum Balance
R5A	100K		RP15F	B-40	A47-100K-S	Q11-128	SU-41	Osc. Balance
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		VIKING PART No.	NOTES
	OHMS	WATT		
R6	120K			Note 1
R7	47K			
R8	10meg			
R9	1000Ω			
R10	220K			
R11	220K			
R12	5600Ω			
R13	2.2meg			
R14	100K			
R15	2200Ω			
R16	220K			
R17	100K			
R18	2.2meg			
R19	120K			
R20	100K			
R21	51K 5%			
R22	2200Ω			
R23	2200Ω			
R24	22K			
R25	22K			
R26	1800Ω			
R27	4.7meg			
R28	1meg			
R29	10K			
R30	100K			
R31	33K			

Note 1. Some versions may use 56K or 68K in this application.

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		VIKING PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Bias Osc.	D501						

## TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	VIKING PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .22A	510VCT @ .010A	6.3V @ .9A	M845						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 1A									

## CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		VIKING PART No.	CBS PART No.	SYLVANIA PART No.	
M1	1N294				Overload Limiter (Pigtail)

## MISCELLANEOUS

ITEM No.	PART NAME	VIKING PART No.	NOTES
M2	Switch		Play-Record

## WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors  
 8524 (Stranded) Available in Ten Colors  
 Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)  
 1725-K (7½ Ft. Length)  
 Low-Loss Shielded Lead (Interconnecting) ..... Use BELDEN No. 8401  
 Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

85 Series (Ch. RP-61B)  
 VIKING MODEL

